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Early Warning and Crop Condition Assessment

A Joint Program for Agriculture and Resources Inventory Surveys Through Aerospace Remote Sensing

March 1981

WINTERKILL INDICATOR MODEL, CROP CONDITION ASSESSMENT DIVISION (CCAD) DATA BASE INTERFACE DRIVER, USER'S MANUAL

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15. Supplementary Notes

16. Abstract

This document gives detailed instructions on the use of the Winterkill Indicator Model CCAD Data Base Interface Driver. The purpose of the system is to interface the Winterkill Indicator Model with the CCAD operational data base. The interface driver routine decides what meteorological stations should be processed and calls the proper subroutines to process the stations.

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WINTERKILL INDICATOR MODEL, CROP CONDITION ASSESSMENT DIVISION (CCAD) DATA BASE INTERFACE DRIVER, USER'S MANUAL

Job Order 72-456

This report describes the Alarm Development activities of the Early Warning and Crop Condition Assessment Division project of the AgRISTARS program.

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LOCKHEED ENGINEERING AND MANAGEMENT SERVICES COMPANY, INC.

Under Contract NAS 9-15800

For

Earth Resources Research Division
Space and Life Sciences Directorate
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
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March 1981

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PREFACE

The Agriculture and Resources Inventory Surveys Through Aerospace Remote Sensing is a 6-year program of research, development, evaluation, and application of aerospace remote sensing for agricultural resources, which began in fiscal year 1980. This program is a cooperative effort of the National Aeronautics and Space Administration, the U.S. Agency for International Development, and the U.S. Departments of Agriculture, Commerce, and the Interior.

The work which is the subject of this document was performed within the Earth Resources (Research/Applications) Division, Space and Life Sciences Directorate, at the Lyndon B. Johnson Space Center, National Aeronautics and Space Administration. Under Contract NAS 9-15800, personnel of Lockheed Engineering and Management Services Company, Inc., performed the tasks which contributed to the completion of this research.

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Contents

1. GENERAL INFORMATION

1.1 SYSTEM NAME

Winterskill Indicator Model CCAD Data Base Interface Driver is the name of this system.

1.2 PRIMARY USER

The primary user of this system is the U. S. Department of Agriculture (USDA), Foreign Agriculture Service (FAS), Crop Condition Assessment Division.

1.3 DEVELOPING ORGANIZATION

Personnel of Lockheed Engineering and Management Services Company, Inc., developed the software that is reported in this document.

1.4 COMPUTER FACILITY

The CCAD computer facility is equipped with a PDP 11/70 and the Data Base Management System 11 (DBMS 11).

2. SYSTEM DESCRIPTION

2.1 PURPOSE

The purpose of the Winterkill Indicator Model CCAD Data Base Interface Driver system is to interface the Winterkill Indicator Model with the CCAD operational data base. The interface driver regulates what meteorological stations should be processed and summons the proper subroutines to process the stations.

2.2 USAGE

The system resides on the User Interface System (UIS) processor and must be executed on the UIS. The PDS command is:

```
PDS > RUN WNTRKL CR
```

The program will then be prepared for input from the terminal and will issue the statement:

INPUT YEAR AND OVERRIDE HARDNESS, IF REQUIRED.
YR H CR
INPUT RUN DEFINITION CARD.INPUT 0 TO STOP.

The run definition card is defined in figure 1. To end the run, a '0' (zero) must be input as an input card type.

3. INPUT

There are two types of input required: disk and card.

3.1 DISK

The model interfaces with the CCAD data base using the METS2P subschema. The format for the data and methods of access are available from the CCAD data base administrator.

3.2 CARD

Two types of input cards are required to operate the model, a "year" card and a run definition card. The formats for these cards are shown in figures 1 and 2.

4. PROCESSING

Figure 3 is a flow chart of the Winterkill Model execution.

4.1 INTERACTIVE

The model is designed to be operated in an interactive mode. All error messages are displayed on the cathode ray tube (CRT) that initiated the run and will be displayed during the run. The output report, which contains a list of the days of indicated winterkill, is sent to the line printer immediately after the model run has been completed. The procedure for executing the model is presented in paragraph 2.2.

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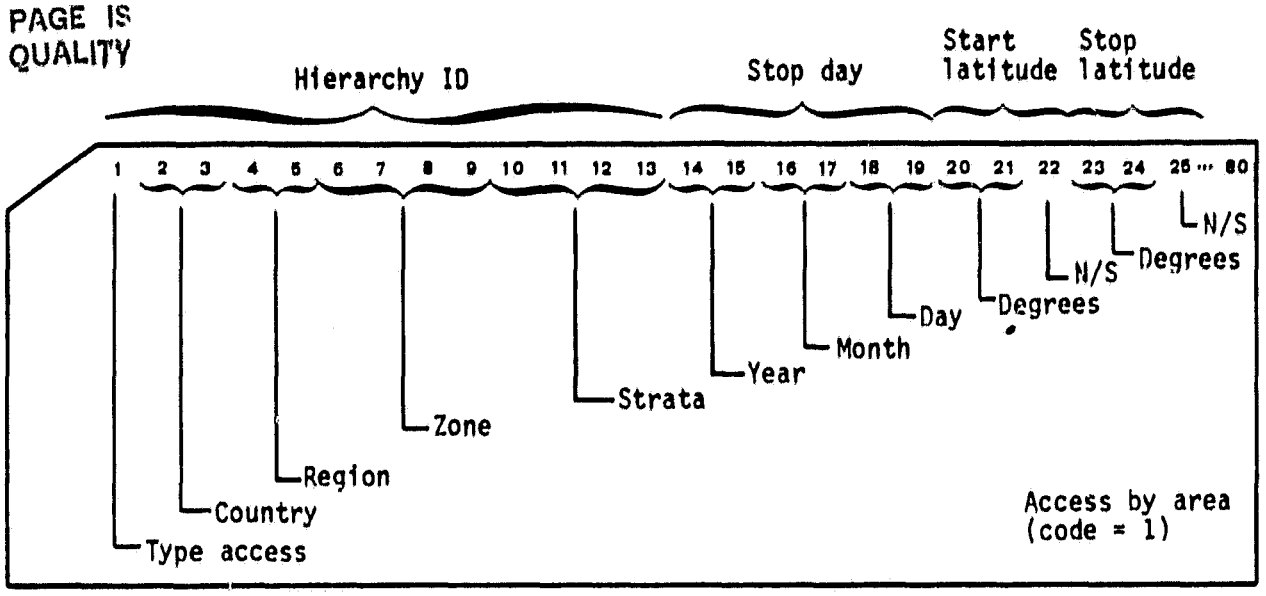
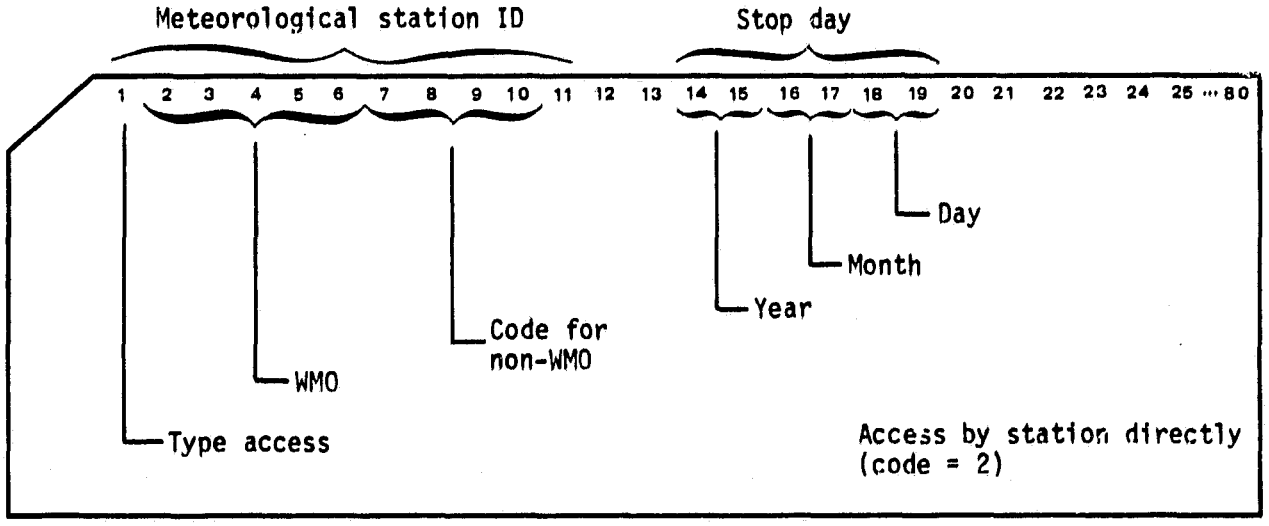


Hierarchy ID: Country only - Process all stations in country.
Country and region - Process all stations in region.
Country, region, and zone - Process all stations in zone.
Country, region, zone, and strata - Process all stations in strata.
Stop day: Blanks - Process all meteorological data.
Date - Process meteorological data prior to date.
Start-stop latitudes: Blanks - Process all stations between 30° and 60°.
Latitudes - Process stations between input latitudes.

(a) Rules where code = 1.



Meteorological station ID: Station ID - Process only this station.
Stop day: Blanks - Process all meteorological data.
Date - Process meteorological data prior to date.

(b) Rules where code = 2.

Figure 1.- Run definition card formats for codes 1 and 2, Winterkill Model.

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YEAR CARD

First card of the input deck must be a year card with the following format:

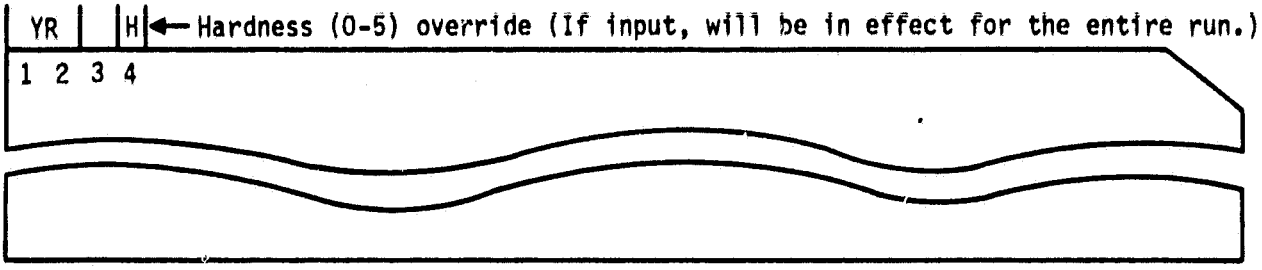

Figure 2.- Year card format, Winterkill Model.

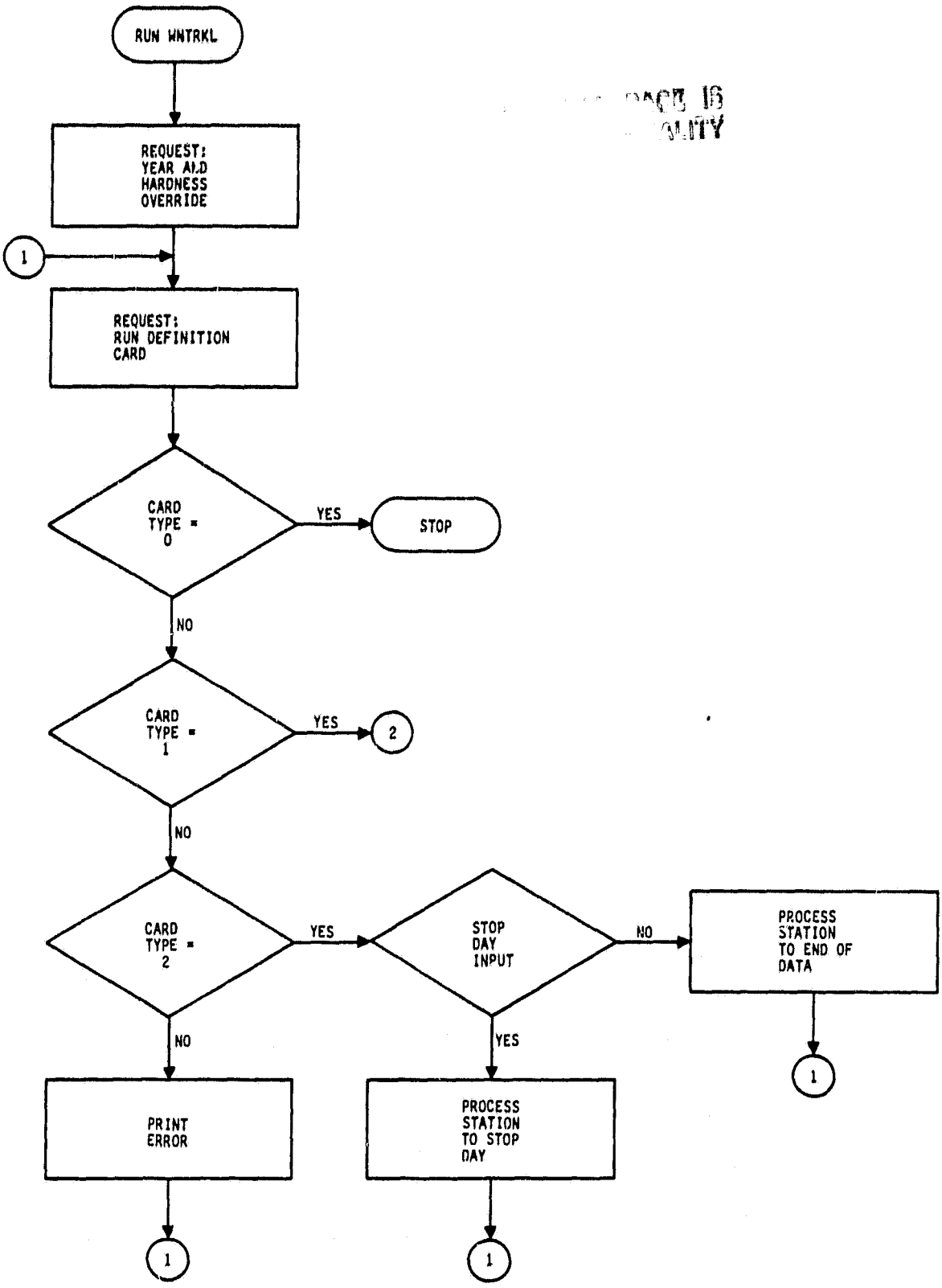

Figure 3.- Execution flow diagram.

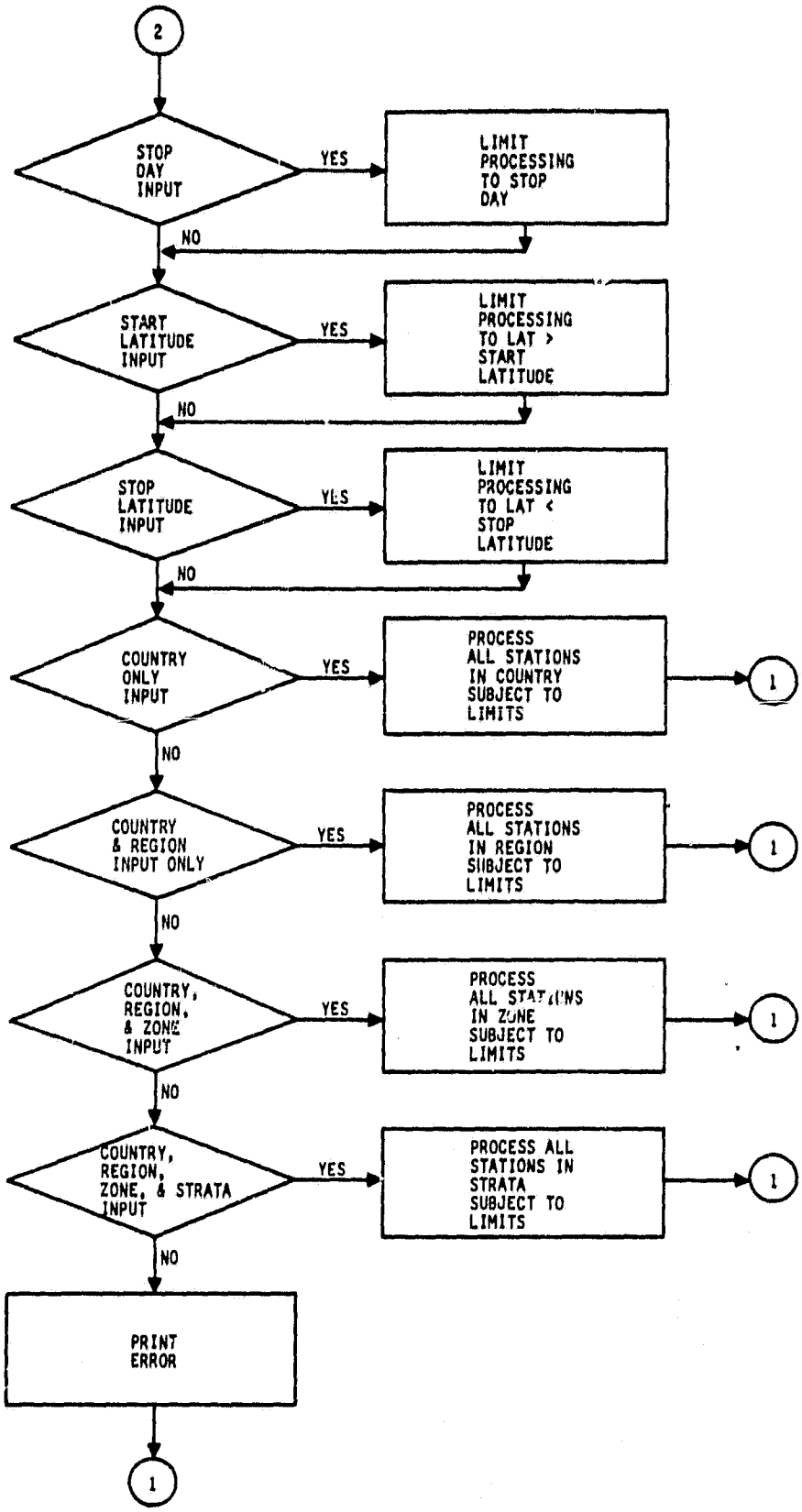

Figure 3.- Concluded.

4.2 BATCH

The model is not presently configured to run in a batch environment. A simple modification to the driver and task builder command file would be required to provide a batch capability.

5. OUTPUT

This model has two types of outputs: disk and hardcopy.

5.1 DISK

For each day of indicated winterkill, the model creates a STN-WINTERKILL record for that day and stores it in the CCAD data base. If the final day of processing for each station does not happen to be a day of indicated winterkill, then a dummy record is created and stored in the data base to indicate the date of last update. The format for the STN-WINTERKILL record is available from the CCAD data base administrator.

5.2 HARDCOPY

The output report consists of a list of indicated winterkill days by station. Included in each day's report are the station ID; the day's date; the number of continuous days of winterkill; the probability of winterkill (percentage) for the day; the hardness; and the minimum and maximum temperature, precipitation, and snow cover for the day.

6. SPECIAL INSTRUCTIONS OR RESTRICTIONS

Use of the Winterkill Model is subject to a few special instructions and restrictions.

6.1 LATITUDE

Use of the Winterkill Model is restricted to stations betweeen latitude 30° N. and latitude 60° N. Any station whose latitude is outside this range (including the entire Southern Hemisphere) will be ignored.

6.2 HARDNESS OVERRIDE

The capability to override the hardness of a particular station has two functions. If an override hardness is input at the beginning of the run, then every station that is processed will contain that hardness and further calculations will begin using that value. Furthermore, if an override hardness of 0 (zero) is input, the program will erase all previous STN-WINTERKILL records and begin calculations anew.

6.3 HARDNESS CALCULATIONS DATA

A minimum of 2 months of data, starting at the first of October, is required to calculate hardness. No hardness calculations should be attempted with the model unless it contains at least this minimum amount of data.

7. REFERENCE

Information contained in this manual was taken from Winterkill Indicator Model documentation, CCAD Software Documentation Library; USDA, FAS; Houston, Texas 77058.